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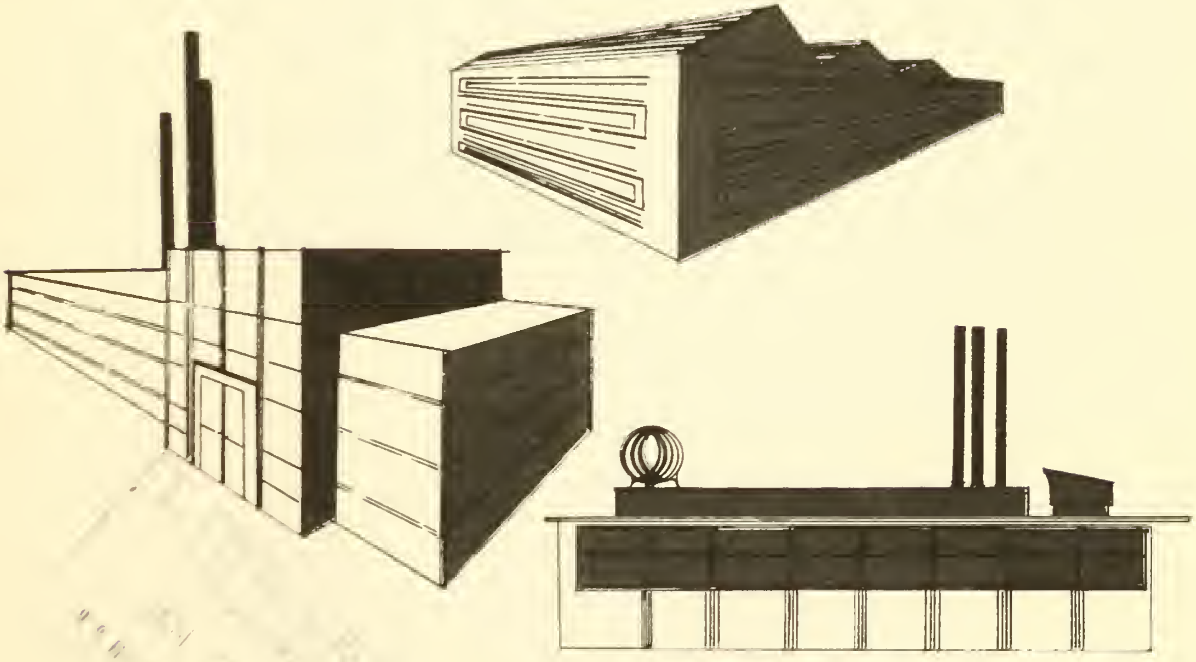
NEW PRODUCT DEVELOPMENT FOR ECONOMIC GROWTH IN RURAL AREAS



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PREFACE

The President in October 1963 appointed a Rural Development Committee of Cabinet members and agency heads with Secretary Orville L. Freeman, USDA, as Chairman, to bring the full force of the Federal government to bear in support of local rural areas development efforts.

Representatives of a number of agencies collaborated in preparing this report on "New Product Development for Economic Growth in Rural Areas" for the Committee. The Committee approved the recommendations to various agencies on December 7, 1964. Names of agencies and publications have been brought up to date as of October 1965.

The report is published so that the background material and suggestions made may be used by community development groups, persons assisting them, or persons interested as individuals in undertaking new product ventures.

Inquiries about any of the services referred to may be directed to agencies for which names and addresses appear in the report or to the Administrator, Agricultural Research Service, USDA, Washington, D. C., 20250.

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Commercial organizations and trade publications are used in this publication solely for the purpose of providing specific information. Mention of this source material does not constitute endorsement by the U. S. Department of Agriculture or other Federal agencies over other informational material not mentioned.

Washington, D.C. Issued December 1965

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NEW PRODUCT DEVELOPMENT
for Economic Growth in Rural Areas

THE CHALLENGE

New products are basic to overall industrial growth. The burgeoning variety of new products that confronts the consumer and the development of the industrial giants (electronics for example) that were nonexistent only yesterday make the development of new products self-evident. One recent study concludes that all products have limited life as sources of profit—manufacture of most products is profitable for no more than 2 to 5 years and for some products for much less time.

Modern food supermarkets carry more than 1½ times as many items as 10 years ago. Two dramatic examples in the food field will serve to illustrate industrial growth from new products. More than one-fourth of the 1962 crop of potatoes used for food was commercially processed—into chips and shoestrings, frozen french fries, dehydrated mashed potatoes, and a host of other frozen, dehydrated, and canned items. Relatively few years have passed since the first of these potato items appeared. A second example is frozen orange juice concentrate, first produced commercially in 1945–46 and now accounting for over half of the total orange consumption. The U.S. Department of Agriculture holds the basic patent, which resulted from work in cooperation with the Florida Citrus Commission.

In the chemical field, estimates indicate that at least 50 percent of the products manufactured today (1964) were unknown 15 years ago.

Thus, development of successful new manufacturing enterprises for rural areas should involve new products, particularly relative newcomers that have proved their marketability. Though the aim to develop enterprises that will have a future intensifies interest in new products rather than in those that may account for impressive volumes now but are no longer expanding, new products require special know-how and heavy financing through the period of technical and market development. New products, therefore, while essential to overall, sustained development, should not be considered the core of the rural area effort but rather a "plus factor" with which to get the most growth of existing local businesses and utilize any special assets the community may have for attracting outside firms or special know-how groups. The product core of most development programs will continue to be more conventional lines that have growing markets and in which the community has some new or heretofore undiscovered or exploited advantage.

THE PROBLEM

To a community group seeking to expand economic activity, any industry not previously existing in its community is "new." Shifting resource patterns, shifting and expanding markets, and developing new processes—all make familiar products proper objects for consideration in new ventures for rural areas development. To be successful, any new undertaking must begin with processes and product features that meet the market changes that can be anticipated.

Beyond the market changes that can be anticipated is the lure of products so new and different that they are without direct competitors. Rural areas generally lack the kinds and concentration of resources needed for following this lure through the many steps in new product development—from identifying a distinctive consumer need to getting target customers to buy the new product. Sound basic product and process development and promising market tests are essential first steps in new product introduction, but do not insure the functioning of the processes, the availability of technical skills, or the attainment of profitable market volume. These problems notwithstanding, many new products can be developed in rural areas, particularly by established businesses making limited adaptations of (1) existing facilities, (2) skills of the existing work force, and (3) market channels. The government agency or big industry responsible for many new products can provide technical assistance and, if seeking supplies, can also provide a readymade initial market.

Many sources of knowledge about new products that already have been designed or formulated are available. The technical problem of developing efficient production procedures is relatively simple, and many commercial and government aids are available. The difficult problem is matching the product with a profitable demand, on the one hand, and with the community that can produce it advantageously, on the other. Community resources limit the range of product possibilities. Rural areas most in need of new industrial activities offer primarily unskilled but trainable labor, cheap sites, specialized fuel resources, unpolluted air and water, and, less frequently, adequate supplies of raw materials from farms, forests, fisheries, and mines.

SOURCES OF NEW PRODUCT IDEAS ADAPTABLE TO RURAL AREAS

Rural areas provide the natural locations for processing many farm, forest, fishery, and mineral raw materials. The key to adaptability for such enterprises is the capability of the area for low-cost production of the volume and kind of raw material necessary for efficient manufacturing operations. Rural areas also have special advantages for enterprises making products for which the market is primarily rural, such as supplies and equipment used in farm production. Enterprises that are adapted to seasonal production when farmwork is light also offer special possibilities.

Actually a rural area can be a highly attractive location for a very wide range of products that have no rural origins or demands. If the area can provide good transportation, water supplies, community facilities, and a trainable labor supply, it may support a profitable industry. Home-grown inventiveness, promoter interests, and capital have helped many rural areas develop new product industries. Thus, the search for new products adaptable to manufacture in rural areas should be very broad as to types of product. The aggregate development that can result from exploiting many new products that are adaptable to small-scale operation of small or new firms, or at least small beginnings, is vitally important, but the search for products and sponsor should by no means be limited to such possibilities.

Agencies and Organizations

Many agencies and organizations, public and private, develop new products that others may produce, or these agencies may collect new product ideas and information. The principal groups engaged in both types of activity are as follows:

1. The Patent Office of the U.S. Department of Commerce (USDC). (It issues some 1,000 patents each week, making it the point of contact that reflects in large measure all the primary sources of new product ideas.)
2. Research and development activities in other Government agencies:
    a. Nutrition, Consumer, and Industrial Use Research; Agricultural Engineering Research Division; Marketing Research of the Agricultural Research Service; and Forestry Research, Forest Service, U.S. Department of Agriculture;
    b. Bureau of Commercial Fisheries and Bureau of Mines, U.S. Department of the Interior (USDI);
    c. Department of Defense; and
    d. National Aeronautics and Space Administration (NASA).
3. Universities and independent research institutes.
4. Research and development departments of private industries. (Many product possibilities are generated that the company itself does not want to pursue or for which the company prefers to contract with other producers.)
5. Individual inventors and their associations.

These sources provide new product ideas in such vast numbers that even after a stringent weeding-out process, a great number of new product ideas suitable for consideration will remain as potential new industries for rural areas.

Major Listings of New Product Ideas

A partial coverage of the major listings of new product ideas emanating from sources such as the above, along with comment concerning each, is given below.

U.S. Patent Office Official Gazette.—This publication is issued weekly. It is available on annual subscription at $35 per year, or $1.00 per single copy, from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20402.

This publication lists patents granted during the previous week and contains 1,000 to 2,000 entries in each issue. Each entry gives a brief description of the item, and, when necessary, a diagram indicating the patent's function. The purpose of this publication is to publicize the granting of the patent, show patent number, and give date of granting of patent. To make use of this source, the reader should scan each publication for items suitable for rural areas. Description of selected items would require rewriting to be made usable by rural area groups.

U.S. Government Research and Development Reports.—This publication is issued twice monthly for the Clearing House for Federal Scientific and Technical Information, Springfield, Va. 22151. It is available on subscription at $16 per year, through the Superintendent of Documents, U.S. Government Printing Office. Each issue announces over 2,000 new research reports turned over to OTS by U.S. Government agencies. In order to be useful for rural development groups, new product items should be selected, redescribed, and compiled for each publication.

Products List Circular.—This circular is published monthly by Small Business Administration (SBA). One-year subscription is $1.50, single copy 20 cents, available through Superintendent of Documents, U.S. Government Printing Office. Each issue contains 100 to 150 new product ideas selected for use by small industries for expansion purposes and to aid community groups in developing new enterprises.

Technological Digests.—These reports are published monthly by the Organization for Economic Cooperation and Development (OECD). The digests are available at $12 per year, or $1.25 per copy, through OECD Publications Office, 2, rue André-Pascal, Paris (16e), France. Each issue contains information on 75 to 100 new products and processes developed in all parts of the world. These are independently written reports of selected articles published in about a thousand scientific and technical journals. The main object of the digests is to serve small- and medium-sized industrial firms that do not normally have access to information on new foreign products and processes.

Product Licensing Index.—This publication is issued monthly by Kenneth Mason Publications Ltd., 167 Victoria Street, London SWI WK (Victoria 514-1/2), at £10 10s (approximately $60) for a 3-year subscription. Each issue contains information on more than 100 products and processes available for manufacture under license from all parts of the world.

New Products and Processes Subscription Newsletters.—Numerous "reader" services in this industry scan trade, scientific business, and government publications for feasible new products and processes. Their selections are written up, published, and subscriptions sold to anyone interested in the service. Following are two examples: "Technical Survey," published by Gaylor Technical Survey Corp., 650 Neward Avenue, Elizabeth, N.J., and "New Products for Industry," 5841 Mission Gorge Road, San Diego, Calif.

Trade Publications.—Most trade publications, of which there are about 1,500, contain sections, columns, or features describing new products and processes of interest to the particular trade or business served by the publication. Because of the nature of these publications, the product ideas they carry are fairly well categorized. These are a particularly good source for the searcher who has an interest in a definite type of product.

Business Publications.—These publications, such as "Business Week," "Fortune," and "Barrons," often carry articles, features, or columns on new product ideas of interest to the business world. Ideas for new enterprises carried in these publications are usually the most current of all sources.

Consumer Publications.—Such publications as "Good Housekeeping," "Popular Mechanics," "Better Homes and Gardens," "Field and Stream," "Sports Illustrated," "Motorboating," and "Parade" are excellent sources of information on new products for the consumer market. Many contain new product columns or features that appear regularly in each issue.

Inventor's "Service" Firms.—Concerns, such as American Research and Development Co. of Boston, Mass., or Inventors Marketing Services, Inc., New York, are engaged principally in assisting inventors to develop, manufacture, and market their new product ideas. Since these firms are often seeking facilities to manufacture their inventor-client's products, they represent a new-product-idea source for potential or existing manufacturers.

Inventors' Conventions.—Inventors' conventions, wherein large numbers of inventors gather to display their new product ideas, are becoming more and more popular. Attendance at these and similar gatherings can well result in discovering new products suitable for manufacture in rural areas. A schedule of the dates and locations of upcoming inventors' conventions can be obtained from the National Inventors Council, Institute of Applied Technology, National Bureau of Standards.

A most cursory look at the above-named sources for new product ideas will show that the major problem in new product development lies not in any lack of ideas but in their selection and conversion into job-producing enterprises for rural areas. Methods and procedures for acquiring new product ideas and converting them into operating enterprises are discussed below.

NEEDED NEW PRODUCT IDEAS

Despite the fact that literally hundreds of new product ideas come into existence every day, needs for many products and processes still remain unsatisfied. Since the need or desire for these products and processes mean ready markets and assured profits, these as yet undeveloped products and processes represent a fascinating and sometimes frustrating target for the inventor and the potential manufacturer.

As a defense measure, the Armed Forces must keep abreast or even ahead of all new developments having to do with the Nation's defense. For that reason the Armed Forces not only must carry on a continuous search for new products and ideas but it must also encourage and assist inventors and technicians to develop new products and processes for which there is a demonstrated military need. In addition, the Office of Inventions and Innovation, National Bureau of Standards, U.S. Department of Commerce, conducts an "Inventions Referral Service," to bring together inventors and Federal agencies that may be interested in them.

Rural community groups probably should not expend much effort in seeking out new products needing to be invented as a process of economic development. Those communities lacking research and development facilities should concentrate their efforts on those inventions already developed and available for manufacture.

DISSEMINATION OF NEW PRODUCT IDEAS

The Department of Commerce and Small Business Administration disseminate information about new products of both private and public origin. The Rural Community Development Service, formerly Office of Rural Areas Development, of the Department of Agriculture is a leader in new product development. Certain other agencies of the Departments of Agriculture and of the Interior have as their missions the development of new products from raw materials produced in rural areas to improve family living conditions and to help the public make use of such developments. The activities of USDC, SBA, USDA, and USDI in this field are singled out for special attention.

The Department of Commerce

Activities related to disseminating information about new products are carried on by the Patent Office, the Clearing House for Federal Scientific and Technical Information, and the Economic Development Administration. The Department's field offices in 42 major cities afford channels for making the Department's publications and other services available.

Publications of the Department, for disseminating information on new products, include the following, most of which are referred to above as "Sources," page 2.

1. How to Obtain Information from U.S. Patents.

2. U.S. Patent Office Official Gazette (weekly).
3. Index of Patents (annual).
4. U.S. Government Research Reports (twice monthly).
5. Commerce Business Daily, Synopsis of U.S. Government Proposed Procurement, Sales, and Contract Awards.
6. "Developing and Selling New Products." Ed. 2, 1955. U.S. Department of Commerce and Small Business Administration.

The Small Business Administration

The Small Business Administration is responsible for interpreting and disseminating (especially for small business applications) information becoming available in other Departments and agencies, principally the Department of Defense and the National Aeronautics and Space Administration. In addition, SBA-sponsored research has resulted in a number of publications dealing with new product development. The SBA maintains field offices in 70 cities. Among its many services, it organizes and conducts workshops for present and prospective operators of small businesses.

Some SBA publications disseminating information on new product ideas and introduction are:

1. "New Product Introduction for Small Business Owners," SBMS No. 17.
2. Products List Circular (referred to under "Sources," p. 3).
3. "New Product Development and Sale," SBB No. 4, November 1963 (revision).
4. Management Research Summaries. The following is a sampling from an extensive list—
    (a) "Finding New Products for Small Manufacturers." 1962.
    (b) "Helping Small Firms Develop and Exploit New Products." 1963.
5. "How NASA's R&D Helps Small Business," Management Aids No. 159, 1963.

The Department of Agriculture

Processing of Farm Products.—A major segment of the Department's research program is related to developing new products and processes to expand the utilization of farm commodities, referred to as Utilization Research and Development (UR&D). The variety and extent of the long-established methods to disseminate such information are illustrated by these methods used in fiscal year 1963:

79 research patents obtained;
688 research papers published;
682 speeches, press releases, and appearances on radio and television;
52 formal conferences with industry;
38 public service exhibits; and
5,000 technical visitors to UR&D installations.

More recently, methods have been under development to provide pertinent new product and process information more directly to communities engaged in the rural areas development work. UR&D product and process information and assistance include the following:

1. Background discussions of the wide range of UR&D products and processes that have been successfully commercialized as a basis for stimulating consideration of local potentials.

2. Preproject evaluation of promising local situations relating to types of processing in the broad fields (see below) in which UR&D results may play a role.

3. Assistance with project proposals in development and review stages.

4. Technical advice in startup of UR&D product and processes.

The availability of these services to rural areas development groups has been made known by letters from Farmers Home Administration (FHA) headquarters to State technical action panel (TAP)[1] chairman; from the director of the Federal Extension Service (FES) to State extension service marketing and utilization specialists and resource development specialists and directors; and in a Cooperative State Research Service (CSRS) bulletin to State experiment station directors.

A sheet describing UR&D services also was included in a kit of "Programs to Aid in Development of Rural America" distributed by FES at regional rural areas development conferences and to county extension agents. Background discussions have been presented to the Washington staffs of various Department agencies and at regional extension service marketing and utilization committee meetings. Personnel from Washington and the regional divisions of Utilization Research and Development participated in all eight of the spring 1964 regional rural areas development conferences. As a result of these efforts, State and county technical action panel personnel and rural areas development committees are requesting information, meetings, and assistance with specified processing proposals that are being serviced by Washington and regional staff members. The information and assistance supplied depend on the technical competence called for by the type of request and stage of project involved.

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[1] Technical action panels provide unified service and counsel in connection with area development planning efforts of responsible regional, State, area, and county planning bodies of all types and coordinate the development services of USDA agencies. The executive committee consists of representatives from a specified area of the Farmers Home Administration, Soil Conservation Service, and the Agricultural Stabilization and Conservation Service, who serve as chairman, cochairman, and alternate chairman, respectively. Ranking officials of other interested USDA agencies, including the cooperative extension services, and Federal, State, and local agencies in the area are invited to participate.

Personnel at the regional UR&D laboratories and smaller field stations are available for regular service on technical action panels and rural areas development committees for the States and local communities where they are headquartered and in some instances are serving in such capacities.

In addition to the activities of ARS personnel in UR&D described above, FES technologists work out of the regional utilization laboratories with the State cooperative extension services in assisting directly those individuals and groups interested in putting into practical use new processes and techniques developed by the laboratories. These specialists take UR&D research results to businesses and show them how to adapt the results to their use; then the specialists follow through with solving technical problems that arise. In addition, FES personnel and extension marketing and utilization specialists assist individuals and groups considering new or expanded ventures to analyze the economic feasibility of such undertakings. Once it is determined that a proposed venture has considerable merit, specialists from UR&D laboratories and other government agencies are available to furnish detailed technical assistance in developing final plans and to follow through on installation and operating problems.

Marketing equipment and facilities.—Benefits to rural areas seeking growth potentials may accrue from some of the new-product development ideas of marketing research. Much work has been pursued by ARS in marketing research toward more modern, more convenient, lightweight packaging, and toward insectproof packaging. Examples are the lightweight cardboard container replacing the wooden crate or box for shipping many agricultural commodities and the reusable wire crate for shipping poultry.

Marketing research designs instruments and equipment for more objective grading and inspecting. Examples now in commercial use are the Magness-Johnson pressure tester and the mechanical thumb, used to determine the maturity of apples and, in some areas, to determine the picking time for pears; the tomato colorimeter, used to determine the interior color of tomatoes; and the electronic egg grader, used to determine if eggs contain blood spots or pseudomonas rots and to separate white-shell from brown-shell eggs, if desired.

Other instruments being tested will detect internal defects of potatoes, such as hollow heart; internal defects of apples, such as browning and water core, and even the amount of chlorophyll in the apples; the amount of moisture in hay; smut on grain; and other qualities of many commodities. New equipment to improve handling of agricultural commodities also emanates from marketing research. This equipment may be designed to carry out a new technique, as in washing, sorting, sizing, lifting, stacking, or conveying an agricultural product. Equipment developed and proved practicable when used in the prototype stage in a rural area might well be manufactured in such an area.

The changing production pattern of agriculture in some areas calls for increases in cold storage space, in warehousing, and in other marketing facilities. Marketing research personnel help in the design of such facilities.

One of the principal concerns of marketing research is to see that its developments and findings are disseminated in a manner that will get new products and new techniques adopted in the marketing process as rapidly as possible.

Customarily, marketing research information has been disseminated through publication by the USDA, in technical magazines, and in the trade and daily press. Some use has been made of radio, motion pictures, and television. A growing and continuing trend uses radio and television more extensively to make this information available to a larger public. Also, there has been increased interest in using the facilities of the Federal Extension Service and of trade groups and associations. These groups often make information available to interested persons and areas in greater depth than the radio, television, and press outlets feel they can afford to handle. In the process of assimilating marketing research information, rural areas may become interested in development of marketing research equipment and facilities. In this circumstance, the people engaged in marketing research would be able, at least to some degree, to recommend procedures by which rural areas could produce the equipment or instrument that seemed feasible.

Forest Products.—The national Forest Products Laboratory, Madison, Wis., ten Forest and Range Experiment Stations, and numerous field research units of the Forest Service develop and test new methods and uses for timber.

Forest utilization research within the regional experiment station organization is attuned to the needs of the region. The staff of utilization technologists, for example, can work with small sawmill operators to identify and solve some of their problems. Or the Forest Service may engage in a study aimed at increased regional use of low-grade hardwood lumber. In many of the studies, the Forest Service stations rely on the national Forest Products Laboratory for specialized assistance and cooperate with university or industry research agencies. The regional staff of wood utilization specialists also provides consultation and advice to industry and extension agencies and maintains close liaison between non-Federal research groups and the Forest Products Laboratory.

The stations thus act as exchange points between problem areas and the research know-how needed to solve area problems. They adapt laboratory results and possible solutions to technical difficulties encountered by the woodland owner or the wood-using industry. In this way, the unique concentration of scientific know-how at the national Forest Products Laboratory makes itself felt far and wide.

Under the general forestry assistance program, public and private forest landowners, operators of sawmills and processing plants, and industrial and consulting foresters—all are given specialized technical assistance not available from other sources. Some activities include help for area redevelopment and rural areas development committees, to make the best use of the forest resources. Examples of these activities are studying the feasibility of growing trees, advising processors of primary timber products on plant layout and operation, providing training assistance in developing intensive forest multiple-use management plans, and improving utilization and marketing techniques.

The distribution of Forest Service research and management personnel and the personnel of the cooperating State foresters and extension foresters in all timber-producing areas makes the services of many of these professional people conveniently available to the technical action panels and rural areas development committees. This distribution of personnel affords a basis for rapid dissemination of information about new timber product developments, for interpretation by the personnel in terms of local needs and potentials, and for technical guidance in putting the program into production.

Publications of the Forest Service for rural areas development on timber product development cover new products to some extent. Among these are "Forest Industry Opportunities in RAD" and "Special Forest Products for Profit," Agriculture Information Bulletins Nos. 222 and 278, respectively.

Homes, Farm Service Buildings, and Related Equipment.—USDA research programs on rural housing and farm service buildings, though relatively small, offer many possibilities for developing rural industry specializing in the manufacture of buildings and building components. Dwellings and farm service buildings lend themselves to prefabrication. Generally the prefabricated structures are best manufactured by a local industry, because weight or bulkiness, or both, make regional and national distribution uneconomical. Individual farmers are doing less and less of their own construction and are looking increasingly toward readymade products or components that will satisfy their needs. Small businesses set up to manufacture such items would not require a highly educated work force, but rather one handy at the industrial arts—something for which farm people frequently demonstrate a seemingly natural skill.

In the area of design, the USDA research program of rural family housing and farm service structures can be of great assistance in developing a rural building-manufacturing industry. In one research program, oriented toward the family as a consumer unit, research is conducted on functional requirements and efficient arrangements of household activity areas and storage spaces. In another program, engineering studies are made of building materials and construction methods. In both programs, frequently cooperatively, results of this research lead to new and improved designs for built-in facilities within the dwelling unit—kitchens, bathrooms, storage cabinets, for example; for structural components—roof trusses and wall sections; for entire houses; for farm service buildings and their related facilities—fences, feed bins, portable shades; and to some extent, to the design of equipment used with these. The items designed generally have not been considered to be patentable.

To a lesser degree, the criteria and principles of design, construction, and selection of materials and products that result from or are used in the research described above could well be the takeoff point for development of other new products for rural industry. Designing and engineering development skills would need to be available locally or through advisory services. For example, a cabinet closure developed for one of the Department's energy-saving kitchen designs could well be a "new product" in itself. In addition, the principle on which the design was based—cabinet doors that could be left open but safely out of the way while work was in progress—could be applied in working out different kinds of closures that achieved the same purpose.

A wide variety of educational and informational resources are used for disseminating results of research. Some designs are built and placed on exhibit, usually at the Agricultural Research Center, Beltsville, Md., where they are available for inspection by visitors. But information is generally disseminated through publications. Technical and semitechnical reports are published in Department, ARS, or division series, and in professional journals. Extension Service personnel, teachers, and other consultants working with the public frequently use these as sources for information materials that they prepare. Nontechnical publications are also prepared by the research divisions. Many of these are in graphic form for ease of use by families, architects, builders, and other interested persons. They are distributed through the State and local offices of the Extension Service and directly to the user from the Government Printing Office and USDA stocks.

Working drawings for plans of houses, kitchens, service buildings, and livestock equipment are prepared by the Cooperative Farm Building Plan Exchange, and master copies are made available to every State, for distribution through the State extension service agricultural engineer. Clients of the Farmers Home Administration (FHA) can obtain materials and house plans from the State and local offices of that agency on low-cost housing, housing for the elderly, and housing for migrant workers.

The information services of the U.S. Department of Agriculture prepare news releases, radio and TV spots, and other publicity about the designs and other products of research on rural housing and farm service buildings. A mailing list of real estate editors has been set up to receive news releases about plans developed for the Cooperative Plan Exchange. Farm journals and homemaking magazines frequently publish articles, sometimes illustrated, describing the results of research.

Farm Production and Processing Equipment.—Equipment designed to produce and process crops and their byproducts more efficiently become new products to manufacture. Markets for such equipment are rural; often new machines, attachments, and adaptations are designed to fit the special problems of limited production areas. Many such items are developed at agricultural field stations located in the production area and operated in cooperation with the State experiment station. Where such is the case, the personnel of the field stations identify themselves with the local community, their work is closely followed, and they may even serve on technical action panels or rural areas development committees. Communication problems are reduced to a minimum in these situations. Equipment designed for special cultivation, harvesting, and farm processing jobs often are adapted to small-scale manufacture in welding and machine shop facilities in rural towns where they are for local sale. A few examples are fruit harvesting equipment (Michigan); castorbean harvester; and light traps for insects.

Development of farm processing equipment for widely grown crops, often involving design problems somewhat more technical than the foregoing, calls for close collaboration with industrial personnel. The most prominent example is cotton ginning. The only experimental gins in the United States are operated by USDA. Research by the firms in this well-established business is limited, and lines of communications now used are believed to lead to relatively rapid adoption or promising innovations. The industry is located almost entirely in rural areas.

The large farm equipment manufacturers maintain substantial and highly competitive research and development departments that tend to emphasize items with very broad markets, and thus free USDA research for attention to the more specialized situations already described.

The Department of the Interior

Commercial Fishing in Farm Ponds and Reservoirs.– Developmental programs to improve the efficiency of farm-pond fish production and to develop techniques to harvest the overabundant, underutilized fish species in reservoirs are conducted by the Bureau of Commercial Fisheries. These programs assist in developing rural industry by producing new marketable products and creating local equipment demands of a specialized nature.

In July 1961, the Fishing Gear Research Base at Ann Arbor, Mich., started a farm-fish project on Arkansas rice farm ponds. More recently, a similar program was started on reservoirs in South Dakota. Research efforts in both areas are directed at analyzing present fish harvesting practices so a plan of attack, aimed at improving efficiency of fish harvesting methods, can be applied and thus production costs can be reduced.

Fish harvesting equipment designed for use in rice-farm fish ponds has been developed. Field tests of fishing methods and equipment include: (1) Mechanized seining of bar ditches; (2) experiments with an electrical seine for driving fish in bar ditches; (3) mechanical hoisting of fish from water to hauling vehicle; (4) mechanized seining with floating "live cars" attached to bag of seine for sorting purposes; and (5) experiments with an electrical barrier to prevent trash fish from entering ponds filled with surface water.

Although the mechanized fishing methods and harvesting techniques developed by the Bureau of Commercial Fisheries demonstrate considerable improvement over those previously employed, definite conclusions as to efficient and economical means of harvesting pond fish remain to be worked out.

Fish Processing and Preserving.—Historically, technological development in the fishing industry has been slow. Fishermen and processors alike have relied on ancient and customary methods of preserving, handling, and distributing their catch. In recent years the development of breaded fish sticks and breaded shrimp resulted in a tremendous change in processing practices in the industry. Communities suffering from unemployment because of reduced local catches were revived when plants for breading fish sticks were constructed to process frozen products received from abroad.

Further new developments in fish processing and preserving now loom on the horizon; these developments indicate possibilities for continued economic growth in rural fishing areas. The most promising is the development of fish protein concentrate. This product, which can be produced from many species of fish, will enable fishermen to fish all year rather than during short periods when specific species are available. Such continued operations will stabilize the economy of repressed fishing villages, stimulate the purchase of new fishing boats, and assist many other local industries.

Irradiation preservation of fish products, another technological development currently undergoing intensive research, will extend markets for fresh fish products in the many inland areas. This type of preservation helps fishermen in small villages find new demands for their products. Businessmen in the distribution channels find irradiated fresh fish passing through their hands, and merchants in small communities throughout the Midwest find business improved as they begin to handle fresh irradiated sea fish arriving from coastal areas.

Technological breakthroughs, leading to new products such as those mentioned above, will enable the fishing industry to grow and provide employment for many people who possess minimum skills and education. They will be able to pursue traditional tasks of fishing, distributing, and marketing their catch, and a few specialists can handle the organization of highly technical equipment, such as fish protein concentrate processing plants and irradiation facilities.

Mineral Resource Development.—The wise development of domestic mineral resources is a continuing concern of the Bureau of Mines. In addition to a varied program of minerals research and other major activities in the minerals field, the Bureau conducts as one of its principal efforts a "mineral resource development" program. This program includes economic and engineering evaluations of mineral deposits, economic studies of the mineral industries, and the collection and reporting of statistical information on mineral-industry activities at home and abroad. Local development of new products in rural areas often depends upon the utilization of readily accessible mineral raw materials. Whether the product is a new type of artificial stone, lightweight aggregate, minor metal, mineral pigment, or some similar mineral-based commodity, careful consideration should probably be given to the availability of an adequate supply of suitable raw material. The mining and processing technology involved and the market situation also require thorough study. The eight area offices of the Bureau of Mines welcome inquiries about such matters and often can furnish useful information as well as advice regarding development procedures. Within limits they can serve as consultants to community development organizations that are contemplating enterprises based on mineral resources.

DEVELOPING NEW PRODUCT IDEAS INTO LOCAL INDUSTRIES

The extensive available literature about community action to develop local industries, the organizational structure built up to pursue economic development, and the technical and financial aids that have been designed to facilitate development or community action—all can stimulate consideration of new product possibilities and aid in establishing the conditions favorable to such undertakings. But some individual or firm must make the final choice of product and accept the risks of launching it. Local rural areas development communities can be encouraged to focus attention on development of new product ideas by making them a special field of study to be explored fully by a designated group. Such a group would undertake to do the following:

1. Familiarize itself with the sources of new product ideas and the means by which ideas are disseminated, using aids provided for in the recommendations given below.

2. Relate the resources of the community—including the businesses already operating in it—to the broad types of new products that may have most promise in the community.

3. Encourage local businesses to consider the importance of new products for continuing profits and to explore in more detail the sources most closely identified with their interests and resources. This exploration may include attendance at exhibitions sponsored by inventors' organizations and by major industries to make their research developments available for exploitation by others.

4. Recognize that new products involve greater risks and present special needs for careful exploration of feasibility, technical assistance, and knowledge of market potentials; become conversant with the aids available; and resort to such assistance and knowledge early in the consideration of specific new product possibilities.

To further such activity it is recommended that the Federal agencies concerned:

1. Extend USDA presentation and advisory services relating to new product possibilities of its utilization research and development and other research programs to the rural areas development committees, the technical action panels, and cooperating economic development personnel in each State as rapidly as circumstances permit. The presentations should be followed by assistance in formulating and evaluating projects for particular communities. The aim is to make specialized technology, costs, and related knowledge useful and understandable to the community groups.

2. Expand SBA "Products List Circular" to include data on more of the available products. Inaugurate a classification and indexing service in plain language, to increase the usefulness of the work to communities and other users who have specialized interests.

3. Develop a plan for SBA workshops and clinics to be sponsored through rural areas development committees to reach persons undertaking new business enterprises in rural communities. Technical and managerial aids relating to new product introduction may be a special point of emphasis.

4. Encourage further the development of overall economic development plan in all rural areas. This organization will identify private firms and farmers' cooperatives and their facilities that may be the base for expansion with new products. The overall economic development plan also will help limit the search for new products to fields that may be most fruitful for the local area.

5. Develop a plan for making available to rural areas development areas technical and managerial services needed in the early phases

of developing new product ventures that are outside the purview of either USDA research and development activities or the Economic Development Administration.

6. Provide guides for developing project proposals for rural area development that will facilitate early evaluation of products and processes, especially those that are new.

7. Explore more fully the new product developments of Federal departments and agencies and possibilities for use in rural areas. Agencies not referred to in earlier sections of this report may be new product sources.

8. Explore the availability or the possibilities for developing directories of private inventor, research and development organization, and industry activities that can aid new product development in rural areas, either by bringing new product ideas to indigenous industries or bringing in new product enterprises of outside industries.

9. Intensify efforts toward developing products and more effectively utilizing the output of farms, forests, fisheries, and mines.

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